A. BOC Entry and Local Competition

118. As our analysis presented in Section III.A makes clear, long distance markets are already effectively competitive. Hence, little long-term gain in economic efficiency in the form of benefits from lower long distance prices is possible. Professor Hausman's justification for the claim of lower long distance prices is founded largely in his analogy to pricing by Southern New England Telephone (SNET) in Connecticut and GTE in California.[98] This reliance is misplaced.[99]

119. Both Professor Hausman and Professor Gilbert present a misleading picture of the competitive impact of SNET on Connecticut telecommunications markets. First, the major IXCs offer nationwide rates that are comparable to SNET's long distance prices. SNET's interexchange rates, which are billed in one second increments, range from 23 cents during the day to 13 cents at night (or a flat 15 cent flat rate), and only provide small

[98] According to Professor Hausman, "overall SNET residential prices were about 18.4% less than AT&T's on average" (see *Affidavit of Professor Jerry A. Hausman on Behalf of BellSouth*, note 5, *supra*, page 11). Related arguments about the experience with SNET in Connecticut are presented by Professor Gilbert. See *Affidavit of Richard J. Gilbert on Behalf of BellSouth*, note 7, *supra*, pages 19-21.

[99] In his independent examination on behalf of the Department of Justice, Professor Marius Schwartz has reached the same conclusion. According to Professor Schwartz, because Hausman "fails to consider lower rate plans offered by AT&T and other IXCs" and ignores the fact the customers on discount plans account for the highest share of long-distance expenditures, "the rate reductions predicted by Professor Hausman based on his interpretation of the SNET and GTE experiences overstates [the potential for welfare gains] substantially." *Supplemental Affidavit of Marius Schwartz*, ¶¶ 81-83, *supra*, note 74.

discounts for high volumes.[100] In comparison, AT&T One Rate and Sprint Sense Day Plan each offer flat rates of 15 cents a minute to all customers, at all times, regardless of calling volumes. Further, AT&T offers a 10 cent flat rate for a $4.95 monthly fee. Sprint also offers a flat rate of 10 cents per minute for domestic calls between 7 P.M. and 7 A.M., and 25 cents for other domestic calls. It is also currently offering $50.00 a month in free calls on Monday evenings. MCI also offers a competitive flat rate: 12 cents a minute at all times to customers who make over $15.00 a month in calls. Further, it offers all residential customers a 5 cent per minute rate on Sundays. Plainly, even taking into account SNET's one-second billing increments, there is no obvious consumer benefit flowing from SNET's entry into the interexchange market.

120. Moreover, SNET's ability to capture market share is not attributable to any greater efficiencies. Rather, SNET's success is due to its bundling of long distance offerings with its monopoly provision of local services, and to its aggressive promotion of PIC freezes for its own long distance customers. Furthermore, through a recently announced corporate reorganization, SNET has attempted to rid itself from the Act's requirement that it resell local services at a wholesale discount.[101] Thus, contrary to Professor Gilbert and Professor

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[100] Although Professor Hausman maintains that "SNET offers a discount of 10%-15% off the $0.15 per minute price depending on monthly calling volume," according to SNET sales representatives, subscribers to SNET's 15 cent flat rate plan are not eligible for any volume discounts.

[101] See *AT&T v. Commissioners of the Connecticut Dep't of Pub. Util. Control*, Civ. Action No. 397CV01601, Complaint for Injunctive Relief and Declaratory Judgment, ¶ 9 (filed Aug. 8, 1997).

Hausman's contentions, the SNET experience does not prove the benefits of permitting a monopoly ILEC into an in-region, interLATA market. Rather, SNET's behavior illustrates precisely what an ILEC will do to avoid opening its market to competition.[102]

121. Moreover, Professor Hausman provides no evidence that any price discounts that may exist are likely to be long-term, which is the appropriate basis for computing the welfare benefits that he claims.[103] Both SNET and GTE are monopoly providers of local service. As such, they have a clear incentive to protect and extend their market power. They currently receive substantial subsidies in the form of interexchange access charges and revenues from other local services with prices that greatly exceed costs (*e.g.*, prices for

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[102] Dr. William E. Taylor's testimony that interLATA rates in the New York/New Jersey corridor demonstrate that BOC entry into in-region, interLATA markets will foster competition is similarly flawed. See *Testimony of Dr. William E. Taylor of Behalf of BellSouth Long Distance, Inc.*, Before the Louisiana Public Service Commission, Docket No. U-22252, page 18 (March 14, 1997). Although customers can presubscribe to Bell Atlantic/NYNEX for Eastern corridor calls, they must then dial a 10-XXX carrier access code for interLATA calls outside the corridor. Consequently, very few customers have presubscribed to Bell Atlantic/NYNEX, and most Eastern corridor Bell Atlantic/NYNEX intraLATA calls require an access code. These obvious competitive handicaps, and not greater efficiencies, have forced the BOC to lower its interLATA rates.

[103] Professor Hausman's argument that a BOC entrant would prefer lower long distance prices assumes that the BOC has no ability to hamper the competitiveness of IXCs through such non-price means of access discrimination and that the BOC could capture significant market share only with significant reductions in price.

The latter assumption is challenged by Professor Marius Schwartz, who argues that a BOC's increase in profit from expanding access minutes (the channel emphasized by Professor Hausman) is likely to be considerably less than its profit from retail long distance sales. In this case, an increase in a BOC's share of interLATA revenues could be obtained by diverting business from IXCs rather than by expanding output. See *Supplemental Affidavit of Marius Schwartz,* note 74, *supra*, pages 28-29.

business lines, vertical switch features, etc. are generally accepted to be significantly above economic costs[104]). Furthermore, SNET and GTE have an incentive to use these subsidies to cross-subsidize their efforts to acquire future "one-stop shopping" customers, which will increase economic entry barriers faced by CLECs seeking to compete in their markets.

B. One-Stop Shopping

122. While we agree with Professor Hausman that one-stop shopping is a desirable feature for residential customers, consumer choice in one-stop shopping is not possible until local markets become more competitive.[105] Indeed Professor Hausman appears to define the public interest intent of the Telecommunications Act of 1996 narrowly by focusing solely on the effect of BellSouth's entry on long distance services. As we argued earlier, BellSouth's entry into interLATA services before the emergence of effective local service competition is likely to harm the competitive process in both local and long distance markets. Indeed, the potential welfare losses from delaying the emergence of local competition are likely to be very large. This is true because the reduction in prices is likely to be very significant (because local services are an effective monopoly today), because local access service is an essential input for long distance, and because the local market is an order of

[104]BOC respondents argue that pricing access, business, and vertical feature services above cost is necessary in order to recover the costs of providing service to residential customers at rates that are below costs. While no one disputes that access and a large class of services are priced significantly above costs, the BOCs have not been able to demonstrate that service to the average residential user requires a subsidy.

[105] A similar response can be offered for the claims by BellSouth affiant Richard Gilbert, see *Affidavit of Richard J. Gilbert on Behalf of BellSouth*, note 7, *supra*, Section III.

magnitude larger. A modest $0.01 per minute reduction in the effective price of local calls could save consumers on the order of $15 billion per year,[106] more than twice the amount estimated by Professor Hausman from reducing long distance prices by over 18 percent.[107]

123. Professor Hausman argues that the welfare effect of increased competition in local services would be small to the "extent that regulation has been effective" (presumably) in constraining local prices so that they do not exceed efficient long run economic costs.[108] Were one to accept Professor Hausman's presumption, then the Telecommunications Act of

[106] According to FCC data, there were approximately 502 trillion local calls in 1996. Assuming an average call length of three minutes, a $0.01 reduction in the average price for a local call would provide consumer benefits of $15 billion, even if we assume that the price elasticity of demand for local calls is zero (see Federal Communications Commission, *Statistics of Common Carriers 1996*, Table 10, for local call data). Assuming an average flat rate for local service per month of $20 and 200 minutes for local calling a month implies an average local call cost of $0.10 per minute, implying the hypothesized price reduction is 10 percent. We provide these back-of-the-envelope estimates solely to suggest the magnitude of the gains achievable from introducing effective local competition.

[107] Even if one accepts Professor Hausman's argument that prices currently exceed incremental costs in long distance markets, the 18 percent reduction on account of BOC entry is almost certainly too high. Hausman applies the 18 percent figure to all interLATA revenues from residential customers even though not all of the interLATA minutes originated in BOC service areas. The BOC's impact on competition in interLATA markets will be much less in regions already served by GTE or SNET, for example. Curiously, as we noted earlier, the high alleged profitability of interLATA markets has lured few attempts at out-of-region entry by BOC.

[108]See *Affidavit of Professor Jerry A. Hausman on Behalf of BellSouth*, note 5, *supra*, page 17.

1996 would not have been necessary.[109] This is implausible.[110] A more reasonable expectation is that competition will force ILECs to both reduce prices closer to costs and to aggressively seek to minimize costs. These cost and price reductions will deliver large welfare benefits to consumers of both local services, long distance services, and indeed, all telecommunications services that require local access as an essential input.

124. Professor Hausman's arguments fail to convince because they neglect to adequately consider the full impact on the overall price that consumers will pay for "one-stop shopping." Long distance services are only part of the bundle. If reduced prices for long distance services in the short-run are paid for by delaying progress towards sustainable lower

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[109]Professor Hausman also argues that the "own price elasticity of local exchange service is near zero" (see *Affidavit of Professor Jerry A. Hausman on Behalf of BellSouth*, note 5, *supra*, page 17). This is misleading because it confuses demand for local access (which supports both long distance and local calling) and demand for local usage. Because most subscribers purchase flat rate local service, it is difficult to estimate a separate price demand elasticity for local usage; however, it is highly unlikely that it would be zero. Because demand for basic access is commonly believed to be highly inelastic (near zero), most economists favor recovering non-traffic sensitive costs from users as part of the flat rate access charge and charging usage at closer to its incremental cost. Professor Hausman is referring to this sort of rate rebalancing in his footnote 26. The relevant question, however, is whether consumers are paying more than they would under competition for the bundle of local access and calling services that they purchase.

[110] Professor Marius Schwartz concurs:

> "The objection that fewer gains can be expected because BOC prices are regulated, and in some cases are set perhaps even below incremental cost (e.g., for basic residential service at least in rural areas) is not persuasive."

See *Supplemental Affidavit of Marius Schwartz on Behalf of the U.S. Department of Justice,* note 74, *supra*, page 9.

prices for local services then consumers will be harmed and the public interest will not be served. Competition that allows consumers a choice among suppliers for their one-stop shopping services offers the surest mechanism for guaranteeing that prices for both local *and* long distance services are as low as possible.

125. Professor Hausman would have us believe that the benefits of lower prices for long distance services in the short run and the rapid delivery of a single "one-stop" shopping alternative to consumers outweigh any costs remaining from barriers to local entry. While striving for regulatory perfection is not likely to be efficient, one cannot simply ignore -- as Professor Hausman does -- the welfare gains to be obtained from greater local competition. As we noted above, the welfare gains from greater local service competition in BellSouth's territory are plausibly much larger than any speculative welfare gains from BellSouth's entry into in-region, interLATA services. Moreover, while we agree with Professor Hausman that "if the BOCs have satisfied the provisions of Sections 271 and 272 of the Telecommunications Act of 1996, then significant barriers to local entry have been removed,"[111] we see no evidence that this standard has been met, even in its grossest form, much less the 95 percent level hinted at by Professor Hausman.[112]

126. Professor Hausman points out correctly that the United States is unique in

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[111]See *Affidavit of Professor Jerry A. Hausman on Behalf of BellSouth*, note 5, *supra*, page 18.

[112]See *Affidavit of Professor Jerry A. Hausman on Behalf of BellSouth*, note 5, *supra*, page 6-7.

requiring separation between the ILEC and long distance services.[113] He, however, fails to point out that the United States is also unique with respect to its requirements for network unbundling and total service resale. For these pro-competitive policies to be effective, the ILEC must cooperate -- and the ILEC has little incentive to do so, as already noted. The Section 271 requirements cannot be examined in isolation, but need to be considered within the larger context of the Act and its goal of promoting effective local competition.

127. Professor Hausman argues that allowing the ILECs to enter interLATA services would increase the incentives of IXCs to compete in local services.[114] The desirability of integrating into local services in order to offer "one-stop shopping' is well understood. The Telecommunications Act of 1996 recognized that entrants face formidable economic entry barriers in competing with an ILEC in its home market, and hence, the Act required network unbundling at cost-based rates so as to place the ILEC and CLECs on an equivalent footing with respect to essential inputs. The CLECs do not need improved incentives for entering local services (which they already have); rather, they need the opportunity to avail themselves of the pro-competitive policies that are guaranteed under the Act. Permitting the BOCs to enter interLATA services at this time will harm rather than help prospects of successfully implementing the network unbundling provisions of the Act.

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[113]See *Affidavit of Professor Jerry A. Hausman on Behalf of BellSouth*, note 5, *supra*, page 18-20.

[114]See *Affidavit of Professor Jerry A. Hausman on Behalf of BellSouth*, note 5_, *supra*, page 4.

VI. RESPONSE TO CLAIMS OF RICHARD L. SCHMALENSEE

128. Professor Schmalensee[115] offers two principal conclusions in his declaration. First, residential long distance markets are inadequately competitive. Second, BellSouth's low incremental costs and good marketing position make it a credible competitor in the interexchange market. We address these points below.

A. Imperfect Competition in Long Distance

129. We addressed earlier the wealth of evidence that contradicts Professor Schmalensee's assertion that long distance markets are inadequately competitive. He argues that prices have failed to fully reflect the full decline in access charges that has occurred since 1993, and that this is sufficient to demonstrate that long distance markets are not adequately competitive. First, access charges are an important input cost, but they are not the only input cost. Increases in other cost categories such as marketing-related costs or uncollectibles may offset any savings associated with reductions in access charges. Second, changes in tariff prices provide only a noisy and inappropriate estimate of changes in average revenue per minutes (ARPM), which offers a superior summary statistic for assessing price trends. There may be changes in demand patterns that make it difficult to associate reductions in access charges directly to changes in tariffed prices. If one insists on considering patterns in tariff prices, then it is more informative to consider the least-cost

[115]See *Affidavit of Professor Richard L. Schmalensee on Behalf of BellSouth*, note 6, *supra*.

options for delivering service to each category of consumer (see Figure 5). Third, as we noted earlier, ARPM net of access declined for AT&T, which refutes Professor Schmalensee's principal assertion.

130. Professor Schmalensee is also incorrect in asserting that the patterns of market share changes in long distance imply the existence of tacit price collusion.[116] He appears to be arguing that there are stable market shares in long distance markets and that is conducive to collusion. As a matter of theory, of course, evidence of stable market share is thought of as a potential *consequence* of collusion, not as a *precondition* for collusion. In any event, AT&T has continued to lose market share since 1989, and the loss in market share has not been captured entirely by MCI and Sprint. There is an obvious reason that long distance is not conducive to a collusive stability of market shares. Currently, long distance carriers cannot avoid competing for each others' customers. That is, they have no natural way to divide the market. By contrast, a BOC entrant such as BellSouth would have a natural means of dividing the market based on geographic point of origin.

131. Professor Schmalensee also overestimates margins in long distance, claiming that margins are on the order of $0.08 per minute, reflecting a price-cost margin of 80 percent using his numbers.[117] This is implausible. First, he fails to explain why margins

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[116] See *Affidavit of Professor Richard L. Schmalensee on Behalf of BellSouth*, note 6, *supra*, page 6.

[117] See *Affidavit of Professor Richard L. Schmalensee on Behalf of BellSouth*, note 6, *supra*, page 11.

of this magnitude -- if actually realized -- would fail to attract significant entry from the many potential entrants into long distance services. Because all of the essential inputs for entering long distance service are available in competitive markets, the entry barriers are quite low. This is inconsistent with earning margins of 80 percent, suggesting instead that Professor Schmalensee's estimates are too high.

132. Second, his estimates are based on improper assumptions. For example, proprietary data submitted by AT&T indicate that ARPM measures for all switched services were $0.181 per minute in 1994, $0.172 per minute in 1995, and $0.169 per minute in 1996.[118] Also, his estimate of long distance costs also appears too low. First, conservative estimates of network costs are in the range of $0.01-$0.02 per minute. In addition to these, the long distance firm must cover access charges of approximately $0.06 per minute and retail-level and overhead costs that are likely to be in the range of $0.04-$0.06 per minute.[119] This suggests that long distance operating costs are in the range of $0.11 to $0.14 per minute, before accounting for taxes and a normal return on invested capital. An ARPM of $0.169 and operating costs of $0.14 suggest a pre-tax operating margin of 17 percent, far below the 80 percent margins hypothesized by Professor Schmalensee.

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[118]AT&T provided these Average Revenue Per Minute (ARPM) data for total interstate and intrastate switched services.

[119]For AT&T, non-network, non-access costs have increased as a share of revenues since 1988 from 25 percent to 32 percent in 1994 -- remaining approximately constant at $0.058 per minute (see Figure 7).

133. B. BellSouth's Position as a Competitor

134. We agree with Professor Schmalensee that BellSouth is a formidable potential competitor in the interexchange market. However, as we noted earlier, BellSouth's monopoly power in local service raises the specter of monopoly leveraging; at the present time, no other firm is in a position to offer one-stop shopping to residential customers.

VII. RESPONSE TO CLAIMS OF THE WEFA GROUP

135. The WEFA Group has prepared an estimate of the consumer benefits from interLATA entry by BellSouth, based on the WEFA econometric model of the economy.[120] When based upon appropriate assumptions, such econometric models are capable of generating useful insight into how changes in one industrial sector can have effects which propagate throughout the economy. Because telecommunications services are an essential input to virtually every productive activity in the economy, reduction in telecommunications prices generate large gains in economic well-being. Had the WEFA model been run with the assumption that local rates would fall by a similar amount as they assume toll rates would fall, the estimated benefits to Louisiana consumers would be significantly larger. Conversely, if lower toll rates come at the expense of higher relative local rates (because

[120]The WEFA Group, *The Economic Impact of BellSouth's Entry into the interLATA Long Distance Markets in Louisiana,* (March 1997).

competition is delayed), then the overall effect on Louisiana's economy would range from zero to a large negative impact depending upon the input assumptions.

136. Therefore, the WEFA findings are and can be no better than the assumptions employed in the scenarios. Unfortunately, the WEFA report is not based on appropriate assumptions regarding either the base case or the "BellSouth-entry" scenario. For example, WEFA assumes that BellSouth entry will result in a further decline in long-run prices for long distance service of 25 percent (*i.e.*, in addition to what would occur otherwise under the base case scenario). Because long distance prices already approximate economic costs, this assumption is incorrect. Consequently, the WEFA results shed no light on the issue of BellSouth entry on consumers' well-being.

137. Furthermore, although the WEFA report did not adequately describe the assumptions included in the base case scenario (*i.e.*, in which BellSouth is not allowed to enter long distance services at this time), this scenario is likely extremely conservative regarding its forecasts about the improvements in productivity and prices which can be expected in toll markets in the absence of interLATA relief. As a result, the WEFA study attributes far more credit to BellSouth's entry than is warranted. For example, the study assumes a dramatic increase in productivity growth of two percent per year due to interLATA relief, supporting this with ad hoc references to the trade press. Moreover, this assumption seems to be a common one for WEFA because they used the same assumption to

estimate benefits of relaxing the MFJ line-of-business restriction on the BOCs in 1994[121] and again to estimate the benefits of interLATA relief in 1995.[122] Much of WEFA's justification for this assumption in its 1994 study disappeared once the line-of-business restrictions were relaxed, yet WEFA has not adjusted its scenarios to reflect these and other important changes to the base case scenario.

VIII. SUMMARY AND CONCLUSIONS

138. The Telecommunications Act of 1996 is a landmark attempt to promote competition in all telecommunications markets. Recognizing the current state of local exchange competition, the Act contains broad instructions to promote competition in local markets and to deregulate. Around the country, state commissions are engaged in arbitrations to broker agreements between BOCs and entering competitors to ensure progress in local exchange Competition. For purposes of this proceeding, the Act also addresses competition in long distance markets. In particular, Section 271 of the Act seeks to identify

[121]See WEFA Group, *Economic Impact of Eliminating Line-of-Business Restrictions on the Bell Companies*, Bala Cynwyd, Pennsylvania, July 1994, page 14. Although the report was issued after the information services restriction was eliminated, it specifically noted (page 7) that the "recently granted information services relief is not reflected in the Baseline forecast."

[122]See WEFA Group, *Economic Impact of Deregulating U.S. Communications Industries*, Bala Cynwyd, Pennsylvania, February 1995. For a critique of the WEFA analysis which applies as well to the most recent study, see R. Glenn Hubbard, *Economic Impact of entry into Long Distance Markets by Bell Companies: Response to the WEFA Study*, Mimeograph, Columbia University, may 1995.

and achieve criteria for the removal of restrictions against participation by BOCs in interLATA markets.

139. This affidavit addresses the following question: From an economic perspective, what are the appropriate preconditions under which interLATA relief for BellSouth will be in the public interest? To answer this question, one must analyze two related sets of issues. The first set investigates and compares the current state of competition in markets for long distance services and markets for local exchange services. The second set investigates and compares potential gains and losses to consumers from interLATA relief for BellSouth and other BOCs.

140. We address both sets of issues, with a goal of informing the Commission of the economic principles that should guide the decision to grant or deny BellSouth the right to compete in interLATA markets. Two themes guide the analysis. First, while the removal of regulatory entry barriers is generally pro-competitive, premature interLATA relief is likely to be anticompetitive by raising local exchange entry barriers and threatening existing long distance competition. Second, the Commission should protect the process of competition, not competitors; premature removal of the long distance entry barrier would harm the process of competition while protecting BellSouth.

141. The principal conclusions of our affidavit are two:

i. Long distance markets in general are already effectively competitive. Admitting BellSouth and other BOCs as additional competitors will contribute little to long distance competition, and as long as they continue to control local monopolies, will likely harm competition in local exchange markets as well as the long distance market. Nothing in the submissions by BellSouth's affiants Jerry Hausman, Richard Schmalensee, Richard Gilbert. D. John Roberts, Glenn A. Woroch, Aniruddha Banerjee, William C. Denk, or the WEFA Group in this proceeding causes us to alter this observation.

ii. Local exchange markets are still effectively monopolized. Anticompetitive behavior by BOCs is unlikely to be restrained in the short-run by market-based competition. Further, regulatory restraint alone will be an inadequate safeguard against subtle anticompetitive practices. Permitting interLATA relief for the BOCs prior to there being effective local exchange competition enhances both the incentive and opportunity to engage in a range of anticompetitive practices. Given these points, our conclusion is that interLATA relief for BellSouth should be postponed until the success of effective local exchange competition is assured. In the near term, entry by BellSouth is likely to impede competition in both local exchange and long distance markets, reducing gains for consumers and frustrating the competitive intent of the Telecommunications Act of 1996.

FCC DOCKET CC NO. 97-231
AFFIDAVIT OF R. GLENN HUBBARD AND WILLIAM H. LEHR

I declare under penalty of perjury that the foregoing is true and accurate to the best of my knowledge and belief.

Executed on November 19, 1997

Robert Glenn Hubbard
R. Glenn Hubbard

STATE OF MASSACHUSETTS)
ss.
COUNTY OF SUFFOLK)

SUBSCRIBED AND SWORN TO BEFORE ME this 19th day of November 1997.

Marianne D'Amico
Notary Public

My Commission Expires:

MARIANNE D'AMICO
Notary Public
My Commission Expires Oct. 30, 1998

FCC DOCKET CC NO. 97-231
AFFIDAVIT OF R. GLENN HUBBARD AND WILLIAM H. LEHR

I declare under penalty of perjury that the foregoing is true and accurate to the best of my knowledge and belief.

Executed on November 20, 1997

William H. Lehr

SUBSCRIBED AND SWORN TO BEFORE ME this 20 day of November 1997.

Channing L. Entwistle
Notary Public

My Commission Expires:

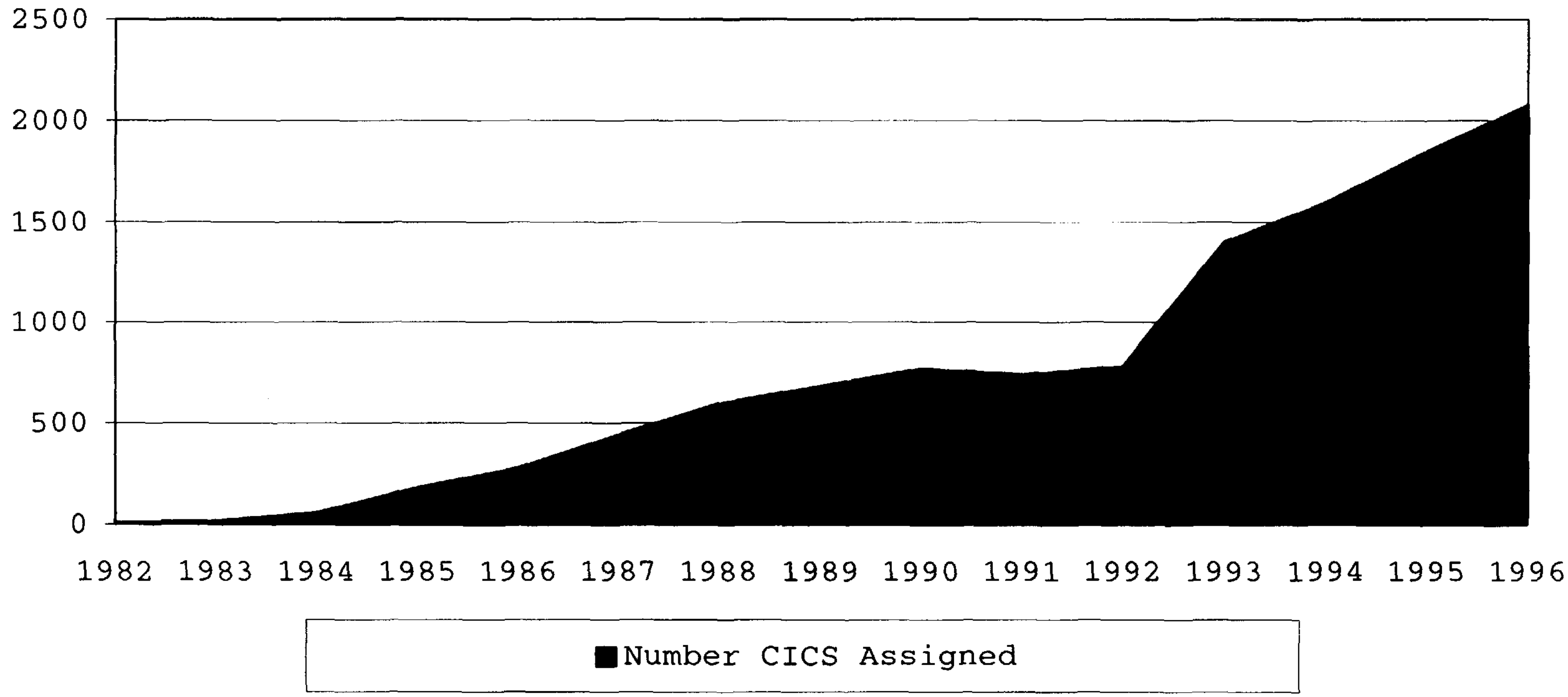
Channing L. Entwistle
NOTARY PUBLIC
My commission exp. Dec. 8, 2000

Figure 1: Composition of the Long Distance Industry, 1994[1]

Tier by Annual Toll Revenue	Facilities-based	Resellers	Total	Share Toll Revenue (%)
Tier 1A: > $5B	3	0	3	80%
Tier 1B: $1B-$5B	2	0	2	6%
Tier 2: $100M-$1B	9	1	10	3%
Tier 3: $15M-$100M	73	57	130	8%
Tier 4: $5M-$15M	120	128	248	3%
Tier 5: <$5M	196	270	466	<1%
Total	403	456	859	100%

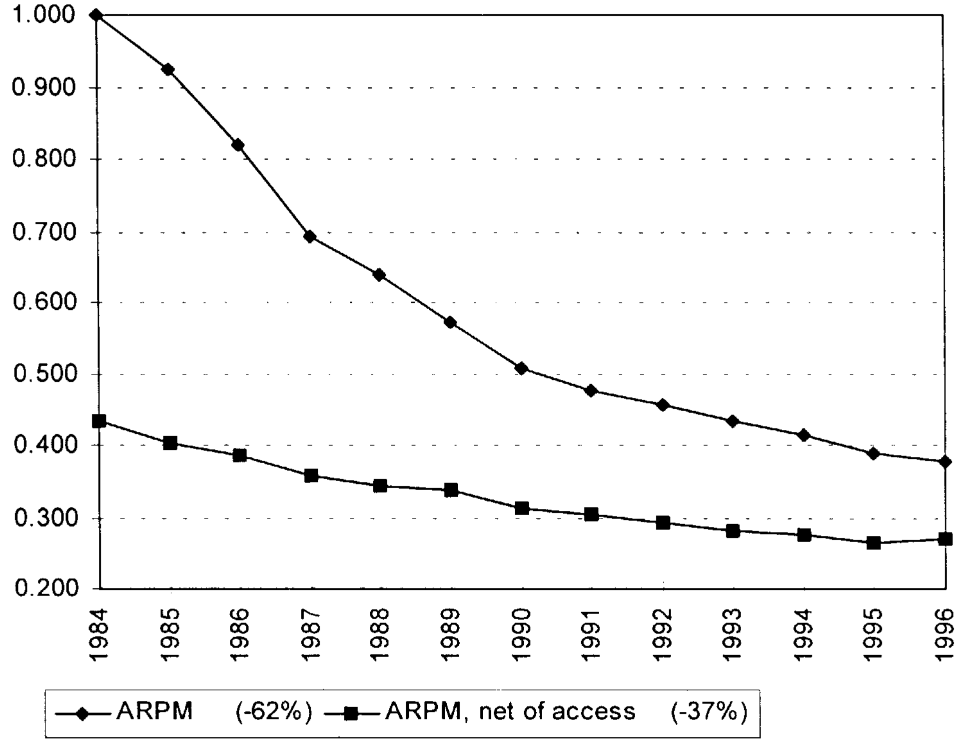
[1] Source: Salomon Brothers, *U.S. Telecom Services*, April 17, 1996, page 19.

Figure 2: Carrier Identification Codes Assigned[1]



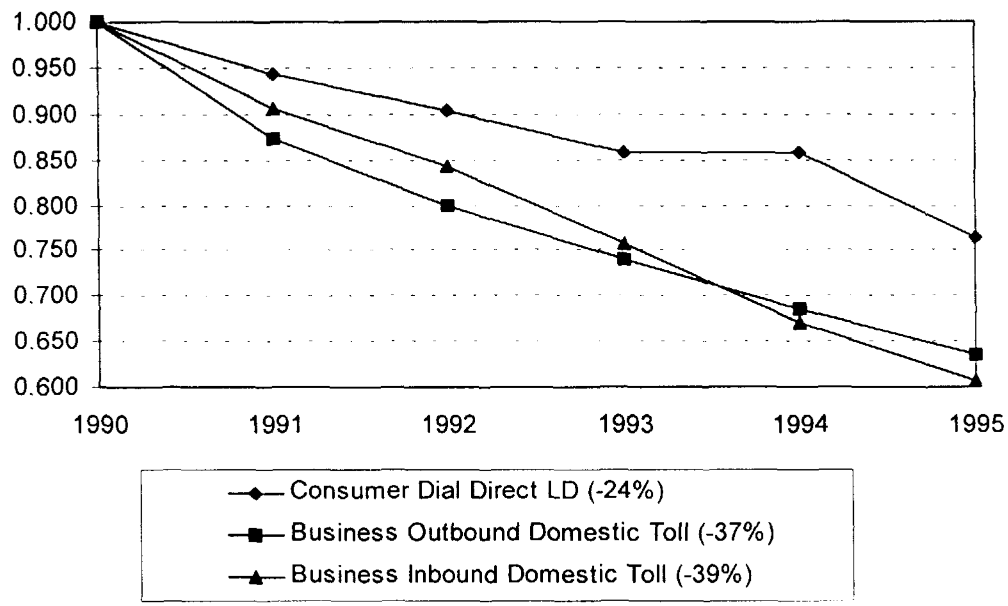
[1] Source: Federal Communications Commission, *Statisticsof Communication Common Carriers*, 1995/1996 Edition, Table 8.13.

Figure 3: AT&T Pricing -- Real Growth in Switched Interstate Toll Service
(ARPM Index 1984 = 100)[1]



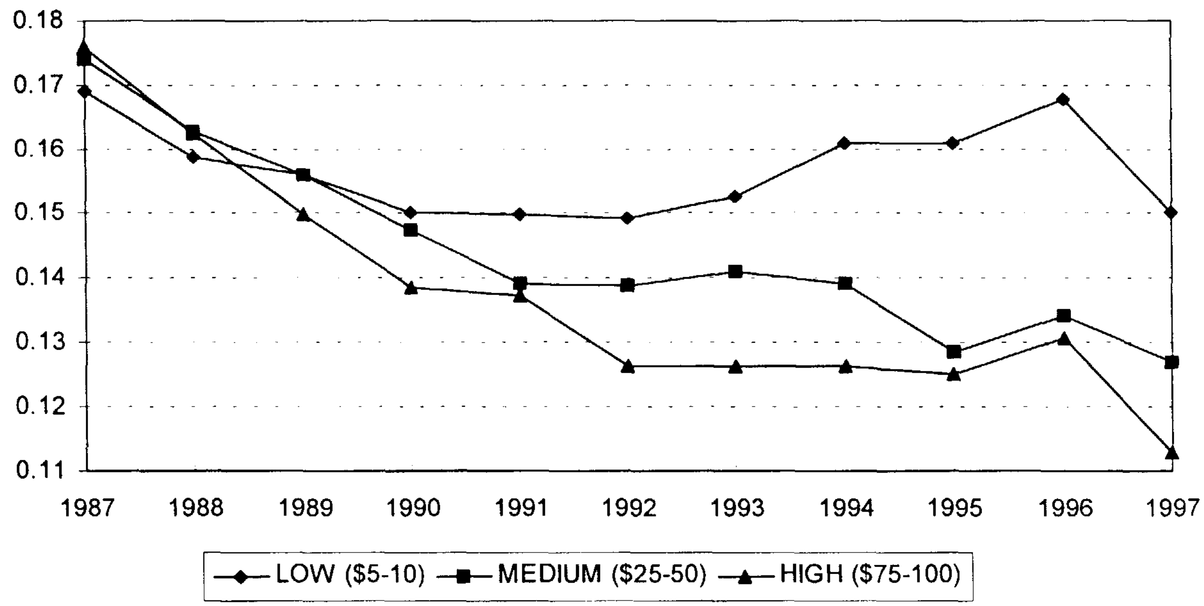
[1] Price indices for Average Revenue Per Minute (ARPM) and ARPM net of access are based on proprietary AT&T data for all switched interstate services. The nominal price data were converted to a constant 1984 dollars using the implicit GDP deflator reported by the Bureau of Economic Analysis in the *Survey of Current Business*.

Figure 4: AT&T Pricing -- Real Growth in AT&T Switched Services
(ARPM Index 1990 = 100)[1]



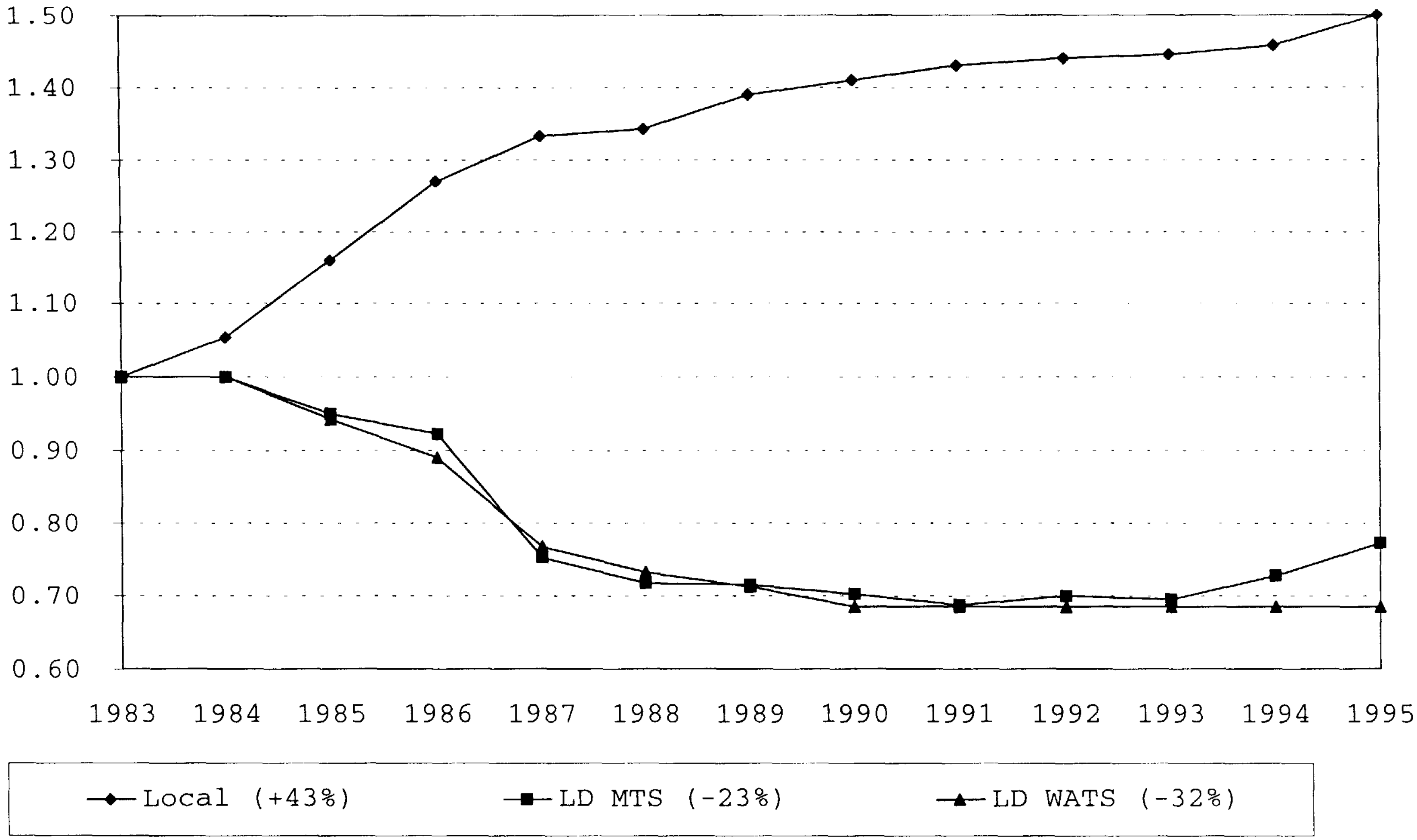
[1] Price indices for Average Revenue Per Minute (ARPM) for Consumer Dial Direct Long Distance, Business Outbound for Domestic Toll and Business Inbound for Domestic Toll are based on proprietary AT&T data. The nominal price data were converted to constant 1990 dollars using the implicit GDP deflator reported by the Bureau of Economic Analysis in the *Survey of Current Business*.

Figure 5: AT&T Pricing by Usage Category Dial-1 Offer Price History
($/minute)[1]



[1] Prices for best offer prices are based on AT&T tariffs applicable to customers in each monthly usage category. This chart was prepared by Thomas Brand of AT&T, January 1997.

Figure 6: Telecommunications Producer Price Indices[1]



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[1] PPI Index in 1983=100. Source: Federal-State Joint Board, *Monitoring Report,* CC Docket No. 87339, May 1996, Table 5.6.

Figure 7: Income Statement Accounts for AT&T, 1988-1994
($ per switched conversation minute)[1]

Acct#		1988	1989	1990	1991	1992	1993	1994
	Share LD revenue switched[2]	86%	88%	88%	89%	89%	90%	90%
	LD Revenue (excl private)[3]	0.239	0.221	0.205	0.198	0.192	0.18	0.181
5300	Uncollectibles	0.005	0.006	0.005	0.006	0.007	0.00	0.005
650	Total Plant Specific Operations	0.024	0.019	0.018	0.018	0.013	0.01	0.012
	Other non plant specific[4]	0.012	0.011	0.010	0.007	0.009	0.00	0.008
6540	Access	0.013	0.092	0.085	0.079	0.074	0.07	0.065
6560	Depn and Amortization	0.016	0.019	0.017	0.018	0.012	0.01	0.013
690	Total Non specific Plant Opns	0.141	0.121	0.112	0.104	0.095	0.09	0.086
700	Total Customer Operations	0.034	0.034	0.032	0.032	0.031	0.03	0.034
710	Total Corporate Operations	0.020	0.020	0.010	0.021	0.029	0.02	0.019

% of switched long distance revenue

Acct#		1988	1989	1990	1991	1992	1993	1994
	LD Revenue (excl private)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
5300	Uncollectibles	2.0%	2.5%	2.5%	3.2%	3.7%	3.1%	3.0%
650	Total Plant Specific Operations	10.0%	8.6%	8.6%	9.2%	6.7%	7.0%	6.5%
6540	Access	47.4%	41.4%	41.4%	40.1%	38.7%	37.6%	35.9%
6560	Depn and Amortization	6.5%	8.5%	8.5%	8.9%	6.2%	6.2%	7.2%
700	Total Customer Operations	14.3%	15.5%	15.5%	16.4%	16.2%	18.4%	18.6%
710	Total Corporate Operations	8.5%	8.9%	8.9%	10.4%	15.2%	14.1%	10.4%

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[1] Source: *Statistics of Communications Common Carriers*, Federal Communications Commission, 1988-1994, Table 2.9. The measure of switched Conversation Minutes of Use (CMOU) is based on proprietary data provided by AT&T for all interstate and intrastate services. Costs per minute are based on the share of long distance revenue switched times the appropriate expenditure category divided by the CMOU.

[2] The share of long distance revenue switched equals long distance revenue (excluding private) divided by LD network service revenues. Long distance revenue (excluding private) is the estimate of switched long distance revenue (=Acct 525 - Acct 5120).

[3] Long distance revenue (excluding private) is estimate of switched long distance revenue (=Acct 525 - Acct 5120).

[4] Other non-plant specific costs are given by Acct 690 - Acct 6540 - Acct 6560.